MEMORANDUM

SUBJECT: Endangered Species Act Considerations for the EPA's Approval of Revisions to Montana's Water Quality Standards

Adopted by the Montana's Board of Environmental Review on July 25, 2014
Submitted to the EPA for review with a letter received on August 15, 2014

FROM: Martin Hestmark, Assistant Regional Administrator
Ecosystems Protection and Remediation Program

TO: The File

DATE: February 26, 2015

This memorandum documents U.S. Environmental Protection Agency's determination that its decision to approve revisions to Montana's water quality standards (WQS) adopted by Montana's Water Quality Board on July 25, 2014, pursuant to Clean Water Act (CWA) Section 303(c), subject in part to completion of Endangered Species Act (ESA) consultation with the U.S. Fish and Wildlife Service (the USFWS or the Service), is consistent with Section 7(d) of the ESA. This memorandum also discusses the bases for EPA's conclusions that approval of certain revisions will not cause impacts of concern to federally-listed endangered or threatened species or their designated critical habitat, and approval of other revisions is not subject to ESA consultation either because EPA does not have discretion to alter its action based on listed species and/or designated critical habitat information or because the action does not affect listed species and/or designated critical habitat.

Section 7(a)(2) of the ESA requires federal agencies, in consultation with the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NMFS) and/or the USFWS, to ensure that any action they authorize, fund or carry out is not likely to jeopardize the continued existence of federally-listed threatened or endangered species, or result in the destruction or adverse modification of designated critical habitat of such species. 16 U.S.C. § 1536(a)(2). Consistent with relevant implementing regulations, Section 7 requirements only apply to actions in which there is discretionary federal involvement or control. 50 C.F.R. § 402.03. Also, under the regulations, consultation is only required for actions that "may affect" listed species or critical habitat. 50 C.F.R. § 402.14. Consultation is not required where the action has no effect on such listed species or designated critical habitat.

I. BACKGROUND INFORMATION AND RATIONALE

The U.S. Environmental Protection Agency Region 8 (EPA) has completed its review of Montana's new and revised water quality standards for nutrients, and is approving the water quality standards as described below. The Montana Department of Environmental Quality (MDEQ) and the Montana Board of Environmental Review (BER or the Board) adopted these revisions on July 25, 2014, and submitted the revisions to the EPA for review pursuant to 40 CFR Section 131.20(c). The submission included: (1) a copy of the adopted amendments and supporting materials; (2) notice of final adoption of the amendments with the state's response to comments; and (3) a letter certifying that the amendments and new water quality standards were adopted in accordance with State law. Receipt of this submission on August 15, 2014, initiated the EPA's review pursuant to Section 303(c) of the Clean Water Act (CWA or the Act) and the implementing federal water quality standards regulation (40 CFR Part 131).

The adopted changes include:

- Adoption of new numeric nutrient criteria (referred to as "base numeric nutrient standards" in the state's documents) for wadeable streams (Department Circular DEQ-12A);
- Adoption of new numeric nutrient criteria for segments of the Yellowstone River (Department Circular DEQ-12A);
- A new general variance authorizing provision and general variance applicable for up to 20 years to waters with numeric nutrient criteria (Department Circular DEQ-12B); and
- New individual variance procedures applicable to waters with numeric nutrient criteria (Department Circular DEQ-12B).

The adopted new and revised water quality criteria and variance provisions that are the subject of the action are scientifically defensible, well supported by the record and consistent with CWA requirements.

The EPA's approval of Montana's July 25, 2014 water quality standards is, in part, subject to Section 7(a)(2) consultation requirements under the Endangered Species Act (ESA). Section 7(a)(2) of the ESA states that "each federal agency ... shall ...insure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined to be critical..." However, certain parts of the approval of the new or revised water quality standards will have no effect on listed or proposed, threatened, or endangered species, or are otherwise not subject to ESA consultation. For these actions, no consultation with the U.S. Fish and Wildlife Service is required.

EPA has a duty under CWA Section 303(c) to complete timely its WQS action. In acting on the state's WQS today, the EPA is fulfilling its legal obligations under this provision of the CWA. In addition, there is a practical benefit to the environment associated with timely completion of this action. As discussed in this document, Montana has promulgated numeric nutrient criteria to supplement its narrative WQS for nutrients. This will facilitate nutrient effluent limits for NPDES permitting, identification of waters impaired for nutrients and timely development of TMDLs. EPA has concluded that there is an overall benefit to the environment associated with timely approval, prior to completion of ESA consultation, of both the stringent numeric nutrient criteria and companion variance procedures.[1] Should the consultation process with the Service identify information regarding impacts on listed species or designated critical habitat that supports amending the EPA's approval, the EPA will, as appropriate, revisit and amend its approval decision for these new or revised WQS.

The EPA began discussions with the USFWS regarding this decision prior to taking action and initiated informal consultation with the USFWS on February 25, 2015 via a letter to Mr. Brent Esmoil, Assistant Field Supervisor, U.S. Fish and Wildlife Service, Montana Field Office. The EPA reviewed the list of

[1] Under MT law, the applicability of the stringent NNC are inextricably linked to the availability of variances. See ARM 17.30.619.

terrestrial, aquatic, and aquatic-dependent species and made a no effect determination for the terrestrial species and a preliminary not likely to adversely affect finding for the aquatic and aquatic-dependent species. Based on discussions with the USFWS staff regarding threatened and endangered species as well as designated critical habitat in Montana, the EPA is comparing occupied and critical habitat areas for bull trout, white sturgeon and pallid sturgeon with the list of dischargers that qualify for a general variance. The EPA's preliminary review identified 14 dischargers located on streams where listed aquatic species are present. The EPA is currently examining the facility and waterbody-specific details and is in the process of discussing the findings with the USFWS. In a February 17, 2015 meeting with the USFWS regarding the EPA's preliminary review, USFWS staff recommended the EPA review several scientific articles/studies related to nutrients and the aquatic environment. The EPA is reviewing the recommended material. The USFWS staff also recommended the EPA coordinate with the Montana Fish Wildlife and Parks (MFWP). The EPA has contacted the MFWP and will begin discussion with that agency as well. In addition, the EPA is reviewing the Final Aquatic Biological Opinion issued by the USFWS for the proposed Montanore Mine Project in Montana. Finally, the EPA will commit agency resources to acquire contractor support on technical aspects related to completing the Biological Evaluation (BE) for this action. The EPA expects to finalize the Agency's BE within six months.

EPA's approval decision is consistent with ESA Section 7(d) because it does not foreclose either the formulation by the Service, or the implementation by EPA, of any alternatives that might be determined in the consultation to be needed to comply with Section 7(a)(2). By approving the standards "subject to the results of consultation under Section 7(a)(2)," EPA has expressly retained the discretion to revise its approval decision if the consultation identifies deficiencies in the standards requiring remedial action by EPA. EPA retains the full range of options available under CWA Section 303(c) for ensuring WQS are environmentally protective. EPA can, for example, work with the state to ensure that the state revises its WQS as needed to ensure protection of listed species. In the unlikely event that the Service determines that disapproval of the state's WQS is necessary to avoid jeopardy to listed species or the adverse modification or destruction of designated critical habitat, EPA retains the authority to revise its decision from an approval to a disapproval. After such a disapproval, EPA must promptly promulgate superseding federal WQS if the state fails to revise its WQS within 90 days. See CWA Sections 303(c)(3) and (4). EPA's approval action, therefore, is neither irreversible nor irretrievable. In addition, as described below, EPA does not believe there will be impacts of concern to listed species or their designated critical habitat during the period prior to the conclusion of ESA consultation.

EPA Water Quality Criteria

Ecological Effects Associated with Nutrient Enrichment

Although nutrients are generally not toxic at levels found in eutrophic conditions, aquatic and aquatic dependent species can be affected by nutrients indirectly. Adverse ecological effects typically associated with nutrient enrichment (i.e., elevated concentrations of nutrients) include changes to the quantity and quality of algae and macrophytes, increased turbidity, excess organic matter in the water column, changes to the dissolved oxygen regime and changes to the food chain due to changes in food resources.

Correll[2] explains the mechanism by which high nutrient concentrations can lead to low DO: "The result of eutrophication is excessive production of autrotophs, especially algae and cyanobacteria. This high productivity leads to high bacterial populations and high respiration rates, leading to hypoxia or anoxia in poorly mixed bottoms waters and at night in surface waters during calm, warm conditions. Low dissolved oxygen causes the loss of aquatic animals and release of many materials normally bound to bottom sediments including various forms of phosphorus."

EPA Recommendations on Deriving Numeric Nutrient Criteria

For over a decade, the EPA has recognized the importance of developing numeric water quality criteria to protect the designated uses of waterbodies from nutrient pollution that is associated with increases in concentrations of nitrogen and phosphorus. In general, the EPA recommends three types of scientifically defensible approaches for setting numeric criteria to address nitrogen and phosphorus pollution: reference condition approach, stressor-response analysis, and mechanistic modeling. The reference condition approach relies on data collected at minimally disturbed reference sites to characterize natural background conditions using percentiles of the frequency distribution from the reference dataset. Deriving nutrient criteria using stressor-response analysis provides an empirical representation of the known causal relationship between increased nutrients and ecological effects. In this approach, the known causal relationship has been established in the scientific literature by observational and manipulative studies. Mechanistic modeling refers to use of watershed models, hydrodynamic models or water quality models to determine NNC. A modeling approach to setting nutrient criteria allows the user to test the interactions between different nutrient loading scenarios, the response endpoint(s), and the candidate nutrient criteria.

Derivation of Montana's Numeric Criteria for Total Nitrogen and Total Phosphorus

Montana promulgated new nutrient water quality standards including numeric criteria for total nitrogen and total phosphorus for all wadeable streams, segments of the Yellowstone River, and site-specific nitrogen and phosphorus criteria for Flint Creek and several segments in the Gallatin watershed. Table 12A-1 of Circular DEQ-12A Section 2.0 (see Enclosure 1) summarizes the NNC approved by the Board of Environmental Review and defines the index period when the criteria apply.

Derivation of the Wadeable Streams Nutrient Criteria Based on Omernik[3] Ecoregions

Montana evaluated several approaches (e.g., lithologic groupings, stream order) to characterize the natural variability in nutrient concentrations before selecting Omernik level III ecoregions as the preferred classification scheme. The state's analysis showed statistically significant differences in median nutrient concentrations between level III and level IV ecoregions. However, data limitations

[2] Correll, DL. 1998. The role of phosphorus in the eutrophication of receiving water: A review. Journal of Environmental Quality. 27:261-266.
[3] Omernik, J.M. Ecoregions of the Conterminous United States. *Ann Assoc Am Geogr* 77, 118-125 (1987).

precluded establishment of NNC at a finer scale (Omernik level IV) on a statewide basis. The state's analysis and the EPA guidance[4] support Montana's decision to derive NNC at the ecoregion level III scale.

Montana followed a multi-step process to establish numeric criteria for TN and TP for wadeable streams. Aquatic life use support was identified as the most sensitive use. By establishing NNC that protect the most sensitive use, Montana's NNC also ensure protection of other designated uses such as recreational use support and drinking water.

1. Montana first characterized nutrient concentrations at reference sites where the aquatic life use was met located within the level III ecoregion.

2. Next, Montana reviewed dose-response studies that were conducted within similar ecoregions and documented in the scientific literature. For each study, Montana identified the nutrient threshold associated with the response endpoint (e.g., algal biomass, diatom or macroinvertebrate metric).

3. Montana used the information obtained from these two approaches (reference and dose-response) as multiple lines of evidence to establish numeric criteria for nitrogen and phosphorus for that ecoregion. Preliminary nutrient criteria were selected using a combination of nutrient percentiles observed at reference sites coupled with thresholds obtained from the relevant stressor-response studies.

4. As a final step in the process, Montana evaluated the nitrogen to phosphorus ratio (N:P ratio / Redfield ratio) associated with the adopted criteria to ensure it was similar to N:P ratios observed at reference sites. N:P ratios can indicate whether nitrogen, phosphorus, or both, are the are the "limiting nutrient" (nutrient in short supply) that constrains algal growth. This final "check" on the proposed criteria ensures that the NNC do not inadvertently alter the limiting nutrient, causing a naturally N-limited stream to become P-limited (or vice versa).

For sites where data were readily available to support the use of level IV ecoregions, Montana established numeric criteria for TN and TP. Examples of level IV ecoregional criteria for TN and TP include (1) the Absaroka-Gallatin Volcanic Mountains where natural background nutrient concentrations are higher than the ecoregion level III nutrient criteria and (2) several level IV ecoregions that reflect transition zones from the mountains to the plains (e.g., Sweetgrass Upland, Pryor-Bighorn Foothills). If dose-response studies were not available for these smaller areas, Montana examined the nutrient concentrations observed in the reference distribution and used the nutrient to benthic chlorophyll-a relationship to calculate the final criteria.

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[4] U.S. EPA. 2000. Nutrient Criteria Technical Guidance Manual: Rivers and Streams. EPA-822-B-00002. http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/rivers/index.cfm. Washington, DC.

Scientific justification for Montana's approach can be found in the May 2013 *Scientific and Technical Basis of the Numeric Nutrient Criteria for Montana's Wadeable Streams and Rivers,*[5] along with an earlier version of the document published in 2008.6 Section 3 of Montana's 2013 technical rationale synthesizes the information used to derive the numeric criteria in a concise and easy-to-follow format. For each ecoregion, the document presents: (1) an ecoregional map; (2) recommended numeric criteria; (3) regional reference population descriptive statistics; (4) comparison of the recommended criteria to the ecoregional reference distribution; (5) summary of any relevant dose-response studies; and (6) a conclusion section containing a brief rationale justifying the recommended ecoregional criteria and an evaluation of N:P ratios.

In its scientific justification, Montana recognizes that the ecoregionally-derived nutrient criteria may need to be refined to reflect site-specific considerations, especially in situations where it can be demonstrated that natural background nutrient concentrations exceed the state's ecoregional nutrient criteria and designated uses are supported. To facilitate development of site-specific criteria, Montana described several approaches for deriving site-specific criteria in Section 6.0 of their implementation guidance.[7] Methods include empirically-derived site-specific criteria based on a robust suite of causal and response variable data or use of a mechanistic model to set protective criteria. The EPA looks forward to working with the state when the state develops such new or revised criteria in the future.

For all NNC adopted by Montana for wadeable streams and rivers, Department Circular DEQ-12A defines the duration and frequency associated with the standard as: "The average concentration during a period when the standards apply may not exceed the standards more than once in any five-year period, on average." (Section 3.0, Endnote 4)

Derivation of Nutrient Criteria for the Yellowstone River

In order to derive NNC for the lower Yellowstone River, Montana chose to utilize an enhanced mechanistic model (QUAL2K). Given the complexity and unique characteristics of large river systems like the Yellowstone, as well as the challenges with determining reference condition for large rivers, Montana determined that utilization of the QUAL2K model to simulate benthic algal growth in the river would be a scientifically defensible approach.

Mechanistic modeling is an additional approach recommended by the EPA for establishing defensible NNC. Mechanistic models integrate nutrient-sensitive assessment endpoints and water quality targets to derive protective NNC. Montana spent considerable time and resources to collect the necessary suite of data needed to calibrate and validate the model. Model development is described in more detail below.

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[5] Suplee, M. W., and V. Watson, 2013. Scientific and Technical Basis of the Numeric Nutrient Criteria for Montana's Wadeable Streams and Rivers—Update 1. Helena, MT: Montana Dept. of Environmental Quality.

[6] Suplee, Michael W., V. Watson, A. Varghese, and Joshua Cleland. 2008. Scientific and Technical Basis of the Numeric Nutrient Criteria for Montana's Wadeable Streams and Rivers. Helena, MT: MT DEQ Water Quality Planning Bureau.

[7] Montana Department of Environmental Quality, 2014. Base Numeric Nutrient Standards Implementation Guidance. Version 1.0. Helena, MT. Montana Dept. of Environmental Quality.

After calibrating the model, Montana ran a series of modeling scenarios to simulate the effect of increasing nutrient concentrations on different eutrophication response endpoints (e.g., pH, dissolved oxygen (DO), benthic chlorophyll, total organic carbon, total dissolved oxygen gas). The most sensitive response endpoint to simulated nutrient additions varied between the upper and lower river reaches. pH was the most sensitive endpoint for the upper segment of the Yellowstone River (Big Horn River confluence to Powder River confluence) compared to the lower river (Powder River confluence to the state line) where simulated nutrient additions resulted in exceeding the benthic chlorophyll-a threshold (150 mg/m^2). As a final step, Montana compared the final numeric criteria to thresholds documented in the scientific literature.[8]

Reach-Specific Criteria: Gallatin Watershed

In addition to the ecoregionally-derived nitrogen and phosphorus criteria for wadeable streams, Department Circular DEQ-12A includes site-specific nutrient criteria for one waterbody in the Clark Fork River basin and eight stream segments in the Gallatin watershed. See Enclosure 1.
For the eight stream segments in the Gallatin watershed, Montana refined the numeric criteria for TN and TP to reflect the contributions of known geologic sources of phosphorus associated with Phosphoria deposits.[9] Portions of the two main tributaries to the Gallatin River, Bozeman and Hyalite Creek, are located within the level IV Absaroka-Gallatin-Volcanic Mountains ecoregion. Montana established level IV nutrient criteria for this area to reflect the naturally elevated total phosphorus concentrations found in these watersheds.[10]

Reach-specific criteria for the tributaries to the Gallatin watershed were calculated using a simple mixing equation to apply in specific locations situations (see below). Natural background (NB) represents the 75th percentile nutrient concentration observed in the reference population from the different contributing ecoregions. This concentration (NB) is multiplied by the average summer flows (Q) for each ecoregional zone to reflect the relative contribution from each area.

$$NB_{NEW} = \frac{(NB_1 * Q_1) + (NB_2 * Q_2)}{Q_1 + Q_2}$$

Following this process, Montana derived reach-specific criteria for Bozeman and Hyalite Creek (See Enclosure 1).

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[8] Montana's detailed scientific basis for TN and TP criteria for segments of the mainstem Yellowstone River can be found in the May 2013 document "*Using a computer water quality model to derive numeric nutrient criteria: Lower Yellowstone River.*"

[9] Scientific justification for MDEQ's approach can be found on pages 4-4 to 4-8 of the May 2013 document: Suplee, Michael W., V. Watson, A. Varghese, and Joshua Cleland. 2008. *Scientific and Technical Basis of the Numeric Nutrient Criteria for Montana's Wadeable Streams and Rivers.* Helena, MT: MT DEQ Water Quality Planning Bureau.

[10] Id.

General Variances

A variance is a "time-limited designated use and criterion that is targeted to a specific pollutant(s), source(s), and/or water body or waterbody segment(s) that reflects the highest attainable condition during the specified time period."[11] The EPA encourages states and authorized tribes to utilize WQS variances, where appropriate, as an important WQS tool that provides time to make progress towards attaining a designated use and criteria. The EPA has offered input and support for variances through Office of General Counsel legal decisions, guidance, memoranda, and approval actions for many years.[12] As discussed in these documents, a variance may be granted if the state can demonstrate that least one of the factors identified in 40 CFR § 131.10(g) precludes attainment of the designated use directly or precludes attainment of the designated use because a discharger(s) cannot meet the WQBEL derived from the applicable designated use and criteria. Section 131.10(g) includes the following factors: (1) naturally occurring pollutant concentrations prevent the attainment of the use; (2) natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met; (3) human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place; (4) dams, diversions, or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to resort the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; (5) physical conditions related to natural features of the water body such as lack of a proper substrate, cover, flow, depth, pools riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or (6) controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact.

The EPA reviewed Montana's basis[13,14] for determining that multiple dischargers throughout the state require coverage under a general variance of up to 20 years based on a demonstration that it is infeasible to meet water quality-based effluent limits (and by extension the designated use) because meeting a WQBEL based on the NNC would cause substantial and widespread economic and social impacts. See 40 CFR§ 131.10(g)(6). Additional discussion regarding Montana's general variances and individual variance provisions are included in Section III.

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[11] 78 Federal Register 54531, exact page September 4, 2013.

12 The EPA's memoranda discussing variances are available on the EPA's website at http://water.epa.gov/scitech/swguidance/standards/handbook/chapter05.cfm or http://water.epa.gov/scitech/swguidance/standards/library/index.cfm. http://water.epa.gov/scitech/swguidance/standards/upload/2008_08_04_standards_wqsvariance.pdf.

[13] Blend, Jeff; Suplee, Michael. 2012. Demonstration of Substantial and Widespread Economic Impacts to Montana That Would Result if Base Numeric Nutrient Standards had to be Met by Entities in the Private Sector in 2011/2012. Helena, MT: Montana Dept. of Environmental Quality.

[14] Blend, Jeff; Suplee, Michael. 2011. Demonstration of Substantial and Widespread Economic Impacts to Montana That Would Result if Base Numeric Nutrient Standards had to be Met in 2011/2012. Helena, MT: Montana Dept. of Environmental Quality.

II. LISTED SPECIES AND DESIGNATED CRITICAL HABITAT

The table below provides the list of threatened, endangered and candidate species in Montana. The species list used to populate the table was dated October 2014 and was obtained from the Service's Environmental Conservation Online System on December 15, 2014.[15] Critical habitat has been designated in Montana for bull trout, the Canada lynx, and piping plover.[16]

Common Name	Scientific Name	Status	Range-Montana
Aquatic			
Bull trout (Columbia River basin and St. Mary - Belly River populations)	*Salvelinus confluentus*	T	Clark Fork, Flathead, Kootenai, St. Mary and Belly river basins; cold water rivers & lakes
		CH	Portions of rivers, streams, lakes and reservoirs within Deer Lodge, Flathead, Glacier, Granite, Lake, Lewis and Clark, Lincoln, Mineral, Missoula, Powell, Ravalli, Sanders counties
Meltwater Lednian Stonefly	*Ledina tumana*	C	High elevation meltwater streams; Glacier National Park
Pallid Sturgeon	*Scaphirhynchus albus*	E	Bottom dwelling; Missouri, Yellowstone Rivers
Water Howellia	*Howellia aquatilis*	T	Wetlands; Swan Valley, Lake and Missoula Counties
White Sturgeon (Kootenai River population)	*Acipenser transmontanus*	E	Bottom dwelling; Kootenai River
Aquatic-Dependent			
Least Tern	*Sterna antillarum*	E	Yellowstone, Missouri River sandbars, beaches; Eastern Montana
Piping Plover	*Charadrius melodus*	T	Missouri River sandbars, alkali beaches; northeastern Montana

[15] http://www.fws.gov/montanafieldoffice/Endangered_Species/Listed_Species/TEClist.pdf
[16] http://ecos.fws.gov/crithab/

Common Name	Scientific Name	Status	Range-Montana
		CH	Alkali lakes in Sheridan County; riverine and reservoir shoreline in Garfield, McCone, Phillips, Richland, Roosevelt and Valley counties
Ute Ladies'-tresses	*Spiranthes diluvialis*	T	River meander wetlands; Jefferson, Madison, Beaverhead, Gallatin, Broadwater counties
Whooping Crane	*Grus americana*	E	Wetlands; migrant eastern Montana
Yellow-billed cuckoo (western population)	*Coccyzus americanus*	T	Population west of the Continental Divide; riparian areas with cottonwoods and willows
Terrestrial			
Black-footed Ferret	*Mustela nigripes*	E/XN	Prairie dog complexes; Eastern Montana
Canada Lynx	*Lynx canadensis*	T	Western Montana
(contiguous U.S. population)		CH	Resident – core lynx habitat, montane spruce/fir forests;
			Transient – secondary/peripheral lynx habitat
			Western Montana - montane spruce/fir forest
Greater sage-grouse	*Centrocercusurophasianus*	C	Eastern, central and southwestern Montana in sagebrush, sagebrush-grasslands, and associated agricultural lands.
Grizzly Bear	*Ursus arctos horribilis*	T	Alpine/subalpine coniferous forest; Western Montana.
Spalding's Campion (or "catchfly")	*Silene spaldingii*	T	Upper Flathead River and Fisher River drainages; Tobacco Valley - open grasslands with rough fescue or bluebunch wheatgrass

Common Name	Scientific Name	Status	Range-Montana
Sprague's Pipit	*Anthus spargueii*	C	Grassland habitats with little or not shrub cover east of the Continental Divide
Whitebark Pine	*Pinus albicaulis*	C	Forested areas in central and western Montana, in high-elevation upper montane habitat near tree line

ENDANGERED (E) - Any species that is in danger of extinction throughout all or a significant portion of its range.

THREATENED (T) - Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

CANDIDATE (C) - Those taxa for which the Service has sufficient information on biological status and threats to propose to list them as threatened or endangered. We encourage their consideration in environmental planning and partnerships, however, none of the substantive or procedural provisions of the Act apply to candidate species.

NON-ESSENTIAL EXPERIMENTAL POPULATION (XN) - A population of a listed species reintroduced into a specific area that receives more flexible management under the Act.

CRITICAL HABITAT, PROPOSED CRITICAL HABITAT (CH, PCH) - The specific areas (i) within the geographic area occupied by a species, at the time it is listed, on which are found those physical or biological features (I) essential to conserve the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by the species at the time it is listed upon determination that such areas are essential to conserve the species.

The actions evaluated in this memo include the approval of new numeric nutrient criteria, new general and individual variances policies for nutrients, and a nutrient critical low flow policy. Thus, the species that could be affected by the EPA's approval of the new or revised water quality standards are limited to aquatic and aquatic-dependent species.[17] For this reason, the following species are not affected by the actions discussed later in this memo.

The one **terrestrial plant species** (*Pinus albicaulis*) listed in Montana will not be affected by the EPA's water quality standards action because it occupies upland habitats, is not aquatic-dependent, and therefore are not exposed to the aquatic resource. This species is assigned a **NO EFFECT** determination and will not be addressed further in this memo.

[17] Species are considered aquatic if at least one of their life stages is spent as a water-breathing organism (i.e., organisms whose respiratory oxygen is gained from that dissolved in the water column). Accordingly, organisms that have a water-breathing stage but later become air-breathers are treated as aquatic species. Species are considered aquatic-dependent if they are not water-breathing organisms, but if a meaningful amount of their diet includes aquatic organisms. A terrestrial species, on the other hand, is a species that will have only limited exposure to "waters of the United States". Definitions were obtained from *Draft Framework for Conducting Biological Evaluations of Aquatic Life Criteria* (EPA, 2006).

The **terrestrial mammal and bird species** listed in Montana include the black footed ferret (*Mustela nigripes*), Canada lynx (*Lynx canadensis*), Grizzly bear (*Ursus arctos horribilis*), Greater sage-grouse (*Centrocercus urophasianus*), Spalding's Campion (*Silene spaldingii*), Sprague's pipit (*Anthus spragueii*). These species will not be affected by the new or revised water quality standards as these species do not inhabit the aquatic system and would therefore not be exposed to any possible effects from these actions. The only possibility for exposure to the effects of these standard changes would be alterations to the aquatic prey base that would be exploited by carnivores and/or terrestrial birds. The EPA has determined the new or revised water quality standards are protective of aquatic life. Since the new or revised water quality standards are not limiting to aquatic life, then the prey base available to these species would be unchanged. These species are assigned a **NO EFFECT** determination and will not be addressed further in this memo.

Below we provide a brief summary of the occurrence, habitat needs, and critical habitat designations for the remaining listed aquatic and aquatic-dependent species. Information sources included the online USFWS species reports, Montana Fish, Wildlife and Parks and the Montana Natural Heritage Program.[18]

Endangered Species

Pallid Sturgeon

The historic range of the pallid sturgeon included the Missouri River and the Mississippi River downstream of the junction with the Missouri River. The pallid sturgeon experienced a dramatic decline throughout its range since the mid to late 1960's.The pallid sturgeon was listed as an endangered species throughout its range on September 6, 1990 (55 FR 36641 36647). Within its historic range, the pallid sturgeon has been restricted due to major alterations of natural river dynamics through channelization and the construction of dams, dikes and levees. The species decline corresponds with commercial harvest and extensive developments on both the Missouri and Mississippi Rivers that have resulted in habitat modification, reduced normal fish migration patterns, and reductions in water quality, including dissolved oxygen and temperature. The fore mentioned disturbances are believed to have reduced available spawning grounds for a species which only spawn every 2 to 3 years. The pallid sturgeon is an opportunistic feeder which consumes primarily aquatic insects, but also crustaceans, mollusks, annelids, eggs of other fish as well as smaller fish.

Counties within Montana in which the pallid sturgeon is known to or is believed to occur include Blaine, Chouteau, Custer, Dawson, Fergus, Garfield, McCone, Petroleum, Phillips, Prairie, Richland, Roosevelt, Valley, and Wibaux. Pallid sturgeon use the lower Yellowstone River primarily during spring and

[18] http://www.fws.gov/montanafieldoffice/Endangered_Species/Listed_Species/countylist.pdf
http://fwp.mt.gov/fishAndWildlife/species/
http://mtnhp.org/Animal/

summer. During fall and winter they primarily use the Missouri River below the confluence with the Yellowstone. Some pallid sturgeon use the Fort Peck tailrace yearlong, but others move downstream in spring (in one case more than 300 kilometers). Although some spawning has been documented with the discovery of a few pallid sturgeon fry, no recruitment has been documented for at least 30 years. After hatching, pallid sturgeon fry drift in the river for several days before settling out of the water column. It is believed that pallid sturgeon fry are drifting into the unsuitable habitats in the upper reaches of Fort Peck Reservoir and Lake Sakakawea, where they die. Without recruitment, the two pallid sturgeon populations in Montana, in the Missouri river above Fort Peck Reservoir and in the lower Yellowstone River and Missouri River below Fort Peck Dam, are comprised exclusively of old fish and are estimated to contain fewer than 30 and 200 adults respectively. These wild populations are expected to go extinct by 2018.

Critical habitat has not been designated for the pallid sturgeon due to insufficient data on the areas critical to its survival.

White Sturgeon (Kootenai River population)

The Kootenai River white sturgeon was listed as endangered in 1994. This population of sturgeon is restricted to 168 river miles between Kootenai Falls, 31 miles below Libby Dam, and Kootenay Lake in British Columbia. The population has been declining for several decades and is expected to have fewer than 50 remaining adults by 2030. Stressors that have contributed to the decline of the Kootenai sturgeon include hydro modifications, deteriorated/loss of spawning habitat (river sloughs and marshes), and reduced water quality. Libby Dam, completed in 1972, drastically changed the Kootenai River ecosystem by disrupting the natural flow regime and altering seasonal and daily water temperatures. Nutrient retention behind the dam and unnatural river flow negatively impact biological production in the river.

In Montana, the portion of the Kootenai River where the white sturgeon is known to occur or is believed to occur is in Lincoln County. The final critical habitat rule for the white sturgeon was published July 8, 2008 and includes critical habitat designations in Idaho. There is no critical habitat designated in Montana.

Least Tern

The least tern was historically abundant in the Mississippi River basin, but has been eliminated from most stretches of the Mississippi River and its tributaries. Alteration of natural river dynamics has caused unfavorable vegetational succession on river islands and banks, curtailing their use as nesting site by terns. Its breeding biology requires 1) the presence of bare or nearly bare alluvial islands or sand bars, 2) the existence of favorable water levels during the nesting season, and 3) the availability of food.

Counties within Montana in which the least tern interior population is known to or is believed to occur include Custer, Dawson, Garfield McCone Prairie, Richland, Roosevelt, Rosebud, Valley, and Wibaux.

Little is known about the migratory patterns of the Least Tern in Montana. Spring arrival of the species occurs in mid-May, with departure in the fall generally occurring by mid-August. Almost all the least terns in Montana have been found in three areas: the eastern end of Fort Peck Reservoir above Fort Peck Dam along the Big Dry Arm; the Missouri River below Fort Peck Dam; and the Yellowstone River below Miles City. Critical habitat has not been designated for the least tern.

Whooping Crane

Whooping cranes presently exist in three populations: the historic Aransas-Wood Buffalo population; an experimental population of released non-migratory birds in central Florida; and another experimental population of migratory birds which were led the fall of 2001 by ultralight aircraft from Necedah National Wildlife Refuge in Wisconsin to Chassahowitzka National Wildlife Refuge in Florida. The Wood Buffalo population migrates from Canada primarily through northeast Montana, North and South Dakota, Nebraska, Kansas, Oklahoma, and Texas wintering along the Texas coast. The Whooping Crane is known to fly through Montana during both spring and fall migration. Many of the recorded observations in the state indicate spring migration dates beginning as early in the year as April and fall departure dates occurring as late as the end of October. The July 2010 total wild population was estimated at 383 and the total wild and captive whooping cranes was estimated at 535.

Whooping cranes require open exposed wetlands, prairie potholes, or freshwater marshes. They seek shallow lakes and lagoons containing small islands of cattails, bulrushes, and sedges. They are omnivorous birds with a diet of insects, crustaceans, small mammals, frogs, and berries. Their diet is often supplemented with roots and grains from fields adjacent to wetlands.

Montana counties in which whooping crane are known to or is believed to occur include Custer, Daniels, Dawson, Fallon, McCone, Phillips, Prairie, Richland, Roosevelt, Sheridan, Valley, Wibaux, and Yellowstone. The final critical habitat rule for the whooping crane was published in the May 15, 1978 Federal Register and included designations in Colorado, Idaho, Kansas, Nebraska, New Mexico, Oklahoma, and Texas. Additional areas of critical habitat were proposed in August 1978 and included habitat in Roosevelt and Sheridan counties in Montana; however, these proposed revisions were never finalized.

Threatened Species

Piping Plover

The breeding range of the piping plover extends throughout the northern Great Plains, the Great Lakes and the Atlantic Coast in the U.S. and Canada. The Northern Great Plains and Atlantic Coast populations of the piping plover are threatened species, whereas the piping plover in the Great Lakes

area is an endangered species. Piping plovers breed in open, sparsely vegetated areas with alkali or unconsolidated substrates. The Great Plains population nests on barren sand and gravel shores of rivers and lakes. Piping plovers feed primarily on exposed beach or gravel substrates and eat insects, spiders, and crustaceans.

The decline of the piping plover populations is primarily related to commercial, residential and recreational development in and surrounding breeding habitat and hydro modifications that disrupt the natural disturbance cycle. Too much water in the spring will flood nests and too little water over long periods of time will allow the establishment of grasses and other vegetation, making habitat unsuitable for nesting.

The Piping Plover usually arrives in Montana in early May and leaves the state by late August. The occurrence and range of threatened populations of piping plover in Montana include Missouri River sandbars, alkali beaches in northeastern Montana. Counties in MT in which the piping plover is known or is believed to occur include Garfield, McCone, Phillips, Pondera, Richland, Roosevelt, Sheridan and Valley. Critical habitat for the piping plover was designed in the September 11, 2002, Federal Register, and included designations in the states of Minnesota, Montana, Nebraska, North Dakota and South Dakota. In Montana, critical habitat is designated in Garfield, McCone, Phillips, Richland, Roosevelt, Sheridan, and Valley counties.

Candidate Species

Meltwater Lednian Stonefly

The Meltwater Lednian Stonefly is a small invertebrate species found in extremely cold glacier-fed streams at high elevations in Glacier National Park (Flathead and Glacier counties). This species is a cold-water stenotherm unable to tolerate warming water temperatures (greater than 10°C), and is generally collected within a few hundred meters of the base of glaciers or snow melt derived streams. Specific threats to the populations of Lednia are largely related to global warming, the melting of glaciers and the reduction of their associated snow melt streams. In general, stonefly populations are affected by changes to aquatic habitat such as alteration of flow patterns, streambed substrate, and thermal characteristics.

Biological Evaluation

It is important to understand that for its CWA Section 303(c) action the Region has taken a conservative approach in its initial identification of new/revised WQS revisions that may be appropriate for ESA consultation (see Section III below). However, it is possible that certain new/revised standards will have no effect on listed species. Accordingly, it is possible that during the ESA consultation process, additional revisions will be identified as not subject to ESA consultation requirements. EPA's biological

evaluation will evaluate in greater detail how EPA's approval of the revisions to WQS may affect listed and candidate species. As discussed above, the EPA will commit agency resources to acquire contractor support on technical aspects related to completing the Biological Evaluation (BE) for this action. The EPA expects to finalize the Agency's BE within six months.

III. REVISIONS APPROVED SUBJECT TO ESA CONSULTATION

By letter dated February 25, 2015, the ESA Section 7(a)(2) informal consultation process with the Service was initiated for the revisions to Montana's WQS. The EPA intends to approve the following revisions subject to completion of the ESA consultation.

New numeric nutrient criteria for total nitrogen and total phosphorus

Montana promulgated new numeric criteria for total nitrogen (TN) and total phosphorus (TP) for wadeable streams, segments of the Yellowstone River, and site-specific nitrogen and phosphorus criteria for Flint Creek and several segments in the Gallatin watershed. In deriving numeric nutrient criteria, Montana applied EPA recommended approaches for deriving numeric nutrient criteria (i.e., reference, stressor-response, mechanistic modeling) to build a solid scientific justification for the adopted criteria. The EPA's review of Montana's nutrient criteria determined the adopted criteria are protective of the designated uses, which should minimize algal biomass, prevent significant changes in the aquatic community and provide the water quality (pH and DO) necessary to support the expected aquatic life. The application of Montana's numeric nutrient criteria in Montana Pollutant Discharge Elimination System (MPDES) permits and Total Maximum Daily Loads (TMDLs) is expected to decrease TN and TP loads and provide wholly beneficial effects to the aquatic ecosystem, including listed aquatic and aquatic-dependent species and their habitat. The effect of EPA approving Montana's new numeric nutrient criteria is to make these criteria "the applicable water quality standards for purpose of the [CWA]" 40 CFR 131.21(c). Accordingly, the EPA has determined its approval of Montana's new numeric nutrient criteria is **NOT LIKELY TO ADVERSELY AFFECT** listed species or their habitat.

New general and individual variances procedures for nutrients

New section ARM 17.30.660(1) authorizes the use of variances for nutrients once the Board of Environmental Review adopts numeric nutrient criteria. Montana also adopted a general variance policy, general variances for public and private dischargers and the procedures for the application of an individual variance. Montana's new general variances require an applicant to conduct an alternatives analysis that includes evaluation of non-discharge options (e.g., pollutant reduction or elimination, seasonal retention, land application, reuse, recharge) so that the permit requires the highest degree of protection that is feasible to achieve. The general variances require end-of-pipe treatment requirements for TN and TP, which in most situations, will result in a reduced loading of TN and TP when the applied in permits. The end-of-pipe limits are greater than the adopted TP and TN nutrient criteria. Depending

on the dilution available for a given discharger, it is likely that a variance will allow for instream TN and TP concentrations that exceed what is necessary to fully protect aquatic life and may produce greater algal biomass than what would be expected if the numeric nutrient criteria are achieved. Furthermore, the highest attainable condition, or what is feasible to achieve will be discharge specific. The potential for a general variance or an individual variance to affect a listed aquatic or aquatic dependent species will vary for each species, permit, and waterbody. Therefore, the EPA has determined that it cannot predict the potential effect of its action at this time and that site specific analyses will need to be a part of the Biological Evaluation to make an affect determination.

The EPA has begun the process to identify individual areas where dischargers receiving a general variance are discharging to a waterbody with threatened or endangered species. To facilitate this site specific analysis, the EPA mapped the locations of all the public and private dischargers included in Montana's economic analysis and overlaid spatial information on the occupied habitat for white sturgeon, pallid sturgeon and bull trout. Several of the dischargers included in Montana's public sector economic analysis discharge into non-wadeable rivers for which numeric nutrient criteria have not yet been derived or adopted. A general variance is not available for these dischargers.

Table 1 summarizes the 16 facilities that are located on waterbodies with listed species and included in MDEQ's general variance. A map of these locations is included in Enclosure 2. The EPA plans to conduct additional site-specific analysis to: 1) identify any facilities that MDEQ does not consider eligible for a general variance (i.e., four of the 16 dischargers are covered under a general permit); 2) determine whether these facilities have reasonable potential for nutrients; and 3) better evaluate the potential effects on endangered and threatened species. The EPA will complete this site-specific analysis, in coordination with the USFWS, within six months.

Table 1. General Variance Dischargers on Waterbodies with Listed Aquatic Species

Facility_Name	County	Receiving_Water	Species	Design_MGD
TOWN OF DARBY WWTF	Ravalli	BITTERROOT RIVER	Bull Trout (LT)	0.155
STEVENSVILLE WWTP	Ravalli	BITTERROOT RIVER	Bull Trout (LT)	0.3
LOLO WWTP	Missoula	BITTERROOT RIVER	Bull Trout (LT)	0.34
CITY OF HAMILTON WWTP	Ravalli	BITTERROOT RIVER	Bull Trout (LT)	1.987
REVETT SILVER COMPANY - ROCK CREEK MINE	Sanders	CLARK FORK RIVER, ROCK CREEK	Bull Trout (LT)	0
TOWN OF PHILIPSBURG WWTP	Granite	FLINT CREEK	Bull Trout (LT)	0.2
MONTANORE MINERALS CORP MONTANORE MINE	Lincoln	LIBBY CREEK & ALLUVIAL GROUNDWATER	Bull Trout (LT)	0
TOWN OF NASHUA WWTF	Valley	MILK RIVER	Pallid Sturgeon (LE)	0.048
CITY OF GLASGOW WWTF	Valley	MILK RIVER	Pallid Sturgeon (LE)	0.7
EUREKA SEWAGE TREATMENT	Lincoln	TOBACCO RIVER	Bull Trout (LT)	0.35
BN WHITEFISH FACILITY	Flathead	WHITEFISH RIVER	Bull Trout (LT)	0
CITY OF WHITEFISH WWTF	Flathead	WHITEFISH RIVER	Bull Trout (LT)	1.25
TOWN OF SAVAGE WWTP	Richland	YELLOWSTONE RIVER	Pallid Sturgeon (LE)	0.04
TOWN OF TERRY WWTF	Prairie	YELLOWSTONE RIVER	Pallid Sturgeon (LE)	0.15
MILES CITY WWTP	Custer	YELLOWSTONE RIVER	Pallid Sturgeon (LE)	2
MDU - LEWIS & CLARK PLANT	Richland	YELLOWSTONE RIVER	Pallid Sturgeon (LE)	42.34

New low flow provisions for nutrients

Montana typically uses a 7Q10 (seven-day, ten year design flow) as the critical low flow for determining the allowable permitted discharge for toxics and other parameters. Since nutrients are not toxic, Montana explored different options for selecting the critical low flow and determined that a 14Q5 was appropriate for discharges containing nutrients. Montana used algal growth rates derived from laboratory studies to model the time (measured in days) it would take to reach peak algal biomass in a stream. Applying the model, the state estimated the number of days it would take before algal biomass concentrations reached nuisance bloom levels of 150 mg/m^2. Results showed that peak algal biomass was achieved in 14-days, on average, resulting in selection of 14-days as the critical low flow duration with a recurrence frequency of once in five years. Montana compared the proposed duration to results from the whole-stream nutrient enrichment study. Results from that study showed that peak biomass was reached approximately 20 days after the start of the nutrient additions. This comparison validated Montana's selection of a 14-day duration low flow period. Overall, the new low flow provision ensures defensible implementation of numeric nutrient criteria in Montana's discharge permits. We have already determined our approval of the numeric nutrient criteria are not likely to adversely affect listed species;

therefore the EPA has determined its approval of the new low flow provision is also **NOT LIKELY TO ADVERSELY AFFECT** listed species or their habitat.

IV. THE EPA ACTIONS NOT SUBJECT TO ESA CONSULTATION

The EPA has concluded that its approval of the following water quality standards revisions is not subject to ESA consultation because either the action will have "no effect" on listed aquatic and aquatic-dependent species or the EPA does not have discretion to act upon listed species. As a result, there is no ESA consultation requirement. The basis for the EPA's conclusion that these new/revised criteria are not subject to ESA consultation is discussed below.

No effect revisions

- New Definitions
  - The new definitions are consistent with EPA guidance and support the new Department Circular DEQ-12A. The EPA has determined that its approval of the new definitions alone will not change the existing environmental conditions and therefore will have **NO EFFECT** on listed species.
- Incorporation by reference of Department Circular DEQ12-A into the designated use classifications.
  - The EPA's approval of DEQ12-A in the designated use rules will not change the existing environmental conditions and therefore will have **NO EFFECT** on listed species.
- Non-substantive edits
  - The EPA considers edits to existing WQS, including non-substantive edits, to constitute new or revised WQS.[19] Montana adopted several non-substantive revisions. Montana adopted several revisions that would be included in this category such as: spelling corrections; adding or removing the word "and"; or numbering changes. These revisions do not substantively change the meaning or intent of the existing WQS; therefore, the EPA has determined that these revisions will have **NO EFFECT** on listed species.

No discretion revisions

- Antidegradation revisions
  - Montana revised their existing antidegradation rule ("nondegradation rule") to consider nutrients as a "harmful" parameter for nondegradation purposes instead of as "toxic". The practical effect of this revision is that it changes the nonsignificance threshold that applies to TN and TP from the 15% of the lowest applicable standard that applies to

[19] See EPA's October 2012 *What is a New or Revised Water Quality Standard Under CWA 303(c)(3)?-- Frequently Asked Questions* available at http://water.epa.gov/scitech/swguidance/standards/cwa303faq.cfm.

"toxic" parameters, to the 10% of the of the applicable standard and existing water quality less than 40% of the standard that applies to "harmful" parameters. The state did not change the nonsignificance thresholds that apply to toxic or harmful parameters, it simply reclassified TN and TP from toxic to harmful. The basis for the EPA's conclusion that approval of antidegradation revisions is not subject to ESA consultation is set forth in "Antidegradation Policy Approvals and Endangered Species Act Consultations", Memorandum from Geoff Grubbs, Director, Office of Science and Technology, to Water Management Division Directors, Regions 1 - 10, January 27, 2005. Because the MT antidegradation revisions meet the EPA's regulatory requirements, the EPA has no relevant discretion to disapprove the revisions based on ESA-related considerations.

V. Conclusion

For all of the reasons discussed in this memorandum, EPA believes its approval of certain new or revised elements of Montana's WQS subject to the outcome of ESA Section 7(a)(2) consultation is consistent with Section 7(d) of the ESA. As described above, EPA also believes that its approval of other elements of Montana's WQS is not subject to ESA Section 7(a)(2) requirements.

Enclosure 1

Table 12A-1. Base Numeric Nutrient Standards for Wadeable Streams in Different Montana Ecoregions. If standards have been developed for level IV ecoregions (subcomponents of the level III ecoregions) they are shown in italics below the applicable level III ecoregion. Individual reaches are in the continuation of this table.

			Numeric Nutrient Standard[4]	
Ecoregion[1,2] (level III or IV) and Number	Ecoregion Level	Period When Criteria Apply[3]	Total Phosphorus (µg/L)	Total Nitrogen (µg/L)
Northern Rockies (15)	III	July 1 to September 30	25	275
Canadian Rockies (41)	III	July 1 to September 30	25	325
Idaho Batholith (16)	III	July 1 to September 30	25	275
Middle Rockies (17)	III	July 1 to September 30	30	300
Absaroka-Gallatin Volcanic Mountains (17i)	IV	July 1 to September 30	105	250
Northwestern Glaciated Plains (42)	III	June 16 to September 30	110	1300
Sweetgrass Upland (42l), Milk River Pothole Upland (42n), Rocky Mountain Front Foothill Potholes (42q), and Foothill Grassland (42r)	IV	July 1 to September 30	80	560
Northwestern Great Plains (43) and Wyoming Basin (18)	III	July 1 to September 30	150	1300
River Breaks (43c)	IV	See Endnote 5	See Endnote 5	See Endnote 5
*Non-calcareous Foothill Grassland (43s), Shields-Smith Valleys (43t), Limy Foothill Grassland (43u), Pryor-Bighorn Foothills (43v), and Unglaciated Montana High Plains (43o)**	IV	July 1 to September 30	33	440

*For the Unglaciated High Plains ecoregion (43o), criteria only apply to the polygon located just south of Great Falls, MT.

[1] See Endnote 1

[2] See Endnote 2

[3] See Endnote 3

[4] See Endnote 4

Enclosure 1 (Continued)

Table 12A-1, Continued. Base Numeric Nutrient Standards for Individual Wadeable Streams (and Wadeable-stream Reaches), and Large-river Reaches.

Individual Stream or Reach Description[2]	Period When Criteria Apply[3]	Numeric Nutrient Standard[4]	
		Total Phosphorus (µg/L)	Total Nitrogen (µg/L)
Wadeable Streams: Clark Fork River basin			
Flint Creek, from Georgetown Lake outlet to the ecoregion 17ak boundary (46.4002, -113.3055)	July 1 to September 30	72	500
Wadeable Streams: Gallatin River basin			
Bozeman Creek, from headwaters to Forest Service Boundary (45.5833, -111.0184)	July 1 to September 30	105	250
Bozeman Creek, from Forest Service Boundary (45.5833, -111.0184) to mouth at East Gallatin River	July 1 to September 30	76	270
Hyalite Creek, from headwaters to Forest Service Boundary (45.5833,-111.0835)	July 1 to September 30	105	250
Hyalalite Creek, from Forest Service Boundary (45.5833,-111.0835) to mouth at East Gallatin River	July 1 to September 30	90	260
East Gallatin River between Bozeman Creek and Bridger Creek confluences	July 1 to September 30	50	290
East Gallatin River between Bridger Creek and Hyalite Creek confluences	July 1 to September 30	40	300
East Gallatin River between Hyalite Creek and Smith Creek confluences	July 1 to September 30	60	290
East Gallatin River from Smith Creek confluence mouth (Gallatin River)	July 1 to September 30	40	300
Large Rivers[6]:			
Yellowstone River (Bighorn River confluence to Powder River confluence)	August 1 -October 31	55	655
Yellowstone River (Powder River confluence to stateline)	August 1 -October 31	95	815

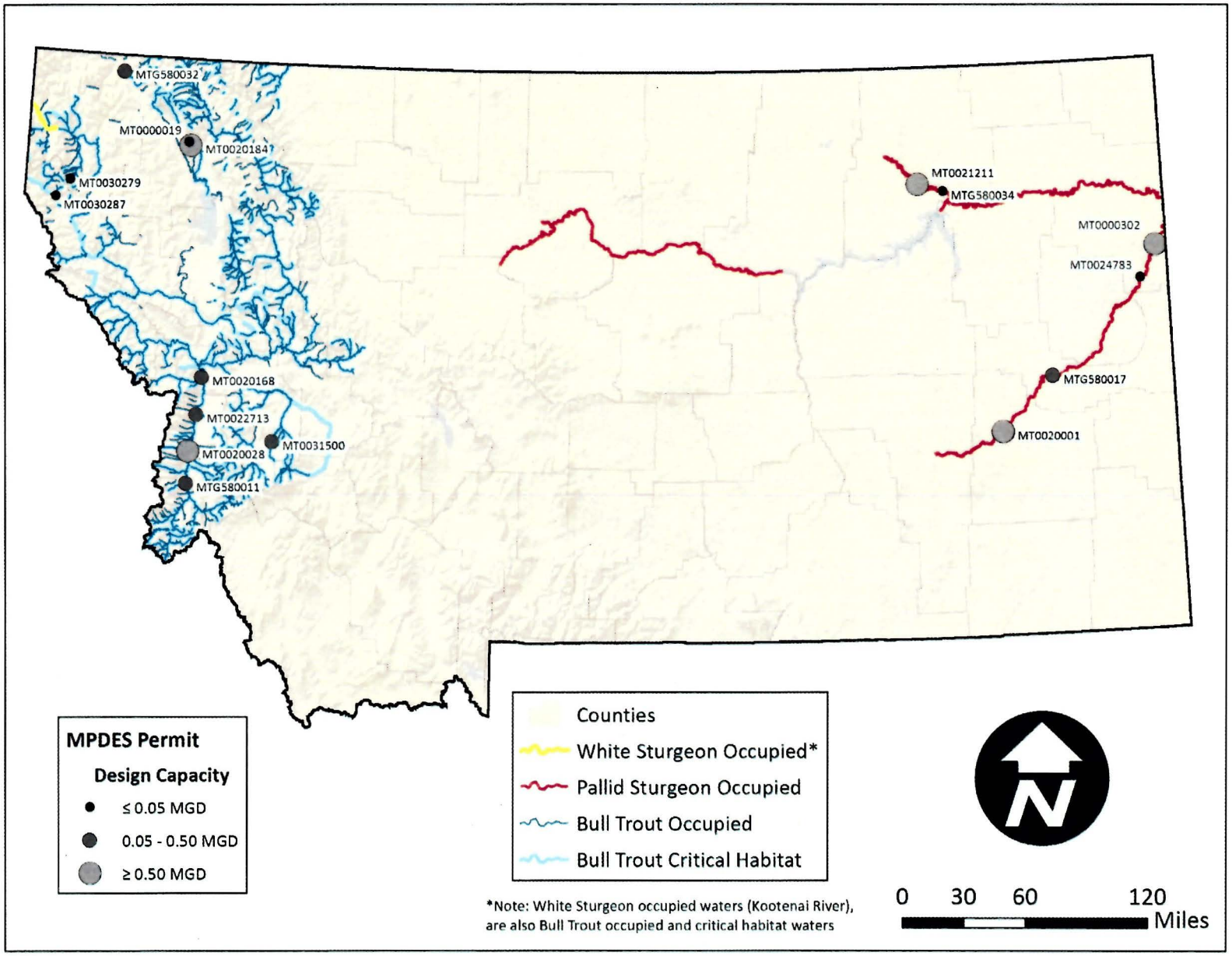
[2] See Endnote 2

[3] See Endnote 3

[4] See Endnote 4

[6] See Endnote 6

Enclosure 2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MT0020028
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MTG580034
MT0000302
MT0024783
MTG580017
MT0020001
MPDES Permit
Design Capacity
≤ 0.05 MGD
0.05 - 0.50 MGD
≥ 0.50 MGD
Counties
White Sturgeon Occupied*
Pallid Sturgeon Occupied
Bull Trout Occupied
Bull Trout Critical Habitat
*Note: White Sturgeon occupied waters (Kootenai River), are also Bull Trout occupied and critical habitat waters
N
0 30 60 120
Miles